

REMARKS

Claims 16-23 remain pending in this application. Claims 16-18, 20 and 22 and are in independent form, and have been amended to even further clarify the claimed subject matter. A minor, formal change also has been made to dependent Claim 19, for purposes of being consistent with Claim 18.

In the Office Action, Claims 16-25 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 5,591,061 (Ikeda et al.) in view of European Patent EP 0 788 130 (Yamanobe).

First, Claims 24 and 25 were previously cancelled, and thus their rejection is moot.

Claim 16 is directed to a method of manufacturing an electron source comprising a step of exposing a surface of a substrate to a sealed atmosphere, on which surface a plurality of electron-emitting devices are to be formed, wherein the sealed atmosphere is formed by a chamber. The method also comprises a step of introducing a gas containing carbon into the sealed atmosphere, depositing carbon on an electro-conductive member disposed on the surface of the substrate, and exhausting the gas containing carbon introduced into the sealed atmosphere during heating of the chamber, after the depositing of the carbon. The chamber is heated before the introducing step, and the introducing of a gas containing carbon is performed while exhausting the sealed atmosphere formed by the chamber.

One notable feature of Claim 16 is that the chamber is heated before the introducing of the gas containing carbon, and the introducing of the gas is performed during the exhausting of the sealed atmosphere.

As described in a previous Amendment, Ikeda et al. relates to an electron-emitting device, having a pair of device electrodes and an electroconductive thin film including an electron emitting region arranged between the electrodes. The device is manufactured by way of an activation process for increasing the emission current of the device. The activation process includes steps of (a) applying a voltage to the electroconductive thin film having a gap section under initial conditions, (b) detecting the electric performance of the electroconductive thin film, and (c) modifying, if necessary, the initial conditions as a function of the detected electric performance of the electroconductive thin film. In an activation step of Ikeda et al., a chamber is heated after the depositing of carbon.

The Office Action states, at page 3, that “Ikeda discloses heating the entire chamber after the activation step (Column 14, lines 17-36), but fails to particularly disclose heating the entire chamber prior the introducing step.” Applicants submit that nothing in Ikeda et al. teaches or suggests heating a chamber before introducing the gas containing carbon, as recited in Claim 16.

Yamanobe relates to an electron-emitting device comprising an electroconductive film including an electron-emitting region and a pair of electrodes for applying a voltage to the electroconductive film. The electron-emitting region is formed by

applying a film of organic substance to the electroconductive film, carbonizing the organic substance by electrically energizing the electroconductive film, and forming a fissure or fissures in the electroconductive film prior to the carbonization.

While in the present invention heating of the chamber after depositing carbon also is performed, heating also is performed in the invention to the chamber before the introducing of the gas containing carbon. Applicants submit that nothing in Yamanobe would teach or suggest heating a chamber before introducing the gas containing carbon, as recited in Claim 16.

The Office Action asserts that “[it would have been obvious for] one of ordinary skill in the art at the time of applicants’ invention to remove the water vapor from the vacuum chamber before an activation step, whether the carbon is introduced as a gas or otherwise, by heating the vacuum chamber prior the introducing step.” The Office Action then asserts that “it would have been obvious . . . to provide the step of heating the entire chamber of Ikeda prior to introducing the carbon gas to remove the water vapor so as to obtain more uniform results in the activation process since Yamanobe teaches that water vapor undesirable affects the activation process and Ikeda acknowledges the suitability and successful performance of heating the entire chamber when thus required.” However, in Yamanobe a chamber is heated after depositing carbon, but, as pointed out above, nothing in that reference would teach or suggest heating a chamber before introducing the gas containing carbon, as recited in Claim 16.

Because neither Ikeda et al. nor Yamanobe teaches or suggests the foregoing features in the context of the method of Claim 16, it is believed that the Office Action has failed to establish a *prima facie* case of obviousness against Claim 16. M.P.E.P. 2143.03 ((“To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.”) (Citations omitted)).

Accordingly, it is believed that Claim 16 is clearly patentable over those references, whether considered separately or in combination.

In view of the foregoing arguments, withdrawal of the Section 103(a) rejection of Claim 16 is respectfully requested.

If, after considering the foregoing remarks, the Examiner still is not persuaded to remove the Section 103(a) rejection of Claim 16, she is respectfully requested to identify the specific section of Ikeda et al. or Yamanobe that she believes teaches the above-emphasized features of Claim 16 relating to heating a chamber before introducing the gas containing carbon.

Independent Claims 17, 18, 20, and 22 recite features that are similar in many relevant respects to those of Claim 16 emphasized above, and also are believed to be clearly patentable over Ikeda et al. or Yamanobe, whether considered separately or in combination, for substantially the same reasons as is Claim 16.

A review of the other art of record has failed to reveal anything which, in Applicants’ opinion, would remedy the deficiencies of the art discussed above, as

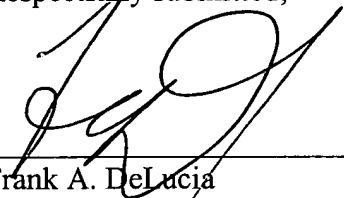
references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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